

# APPENDIX J

## Solubility Products

### Solubility Products

Substance	$K_{sp}$ at 25 °C
aluminum	
Al(OH) <sub>3</sub>	$2 \times 10^{-32}$
barium	
BaCO <sub>3</sub>	$1.6 \times 10^{-9}$
BaC <sub>2</sub> O <sub>4</sub> ·2H <sub>2</sub> O	$1.1 \times 10^{-7}$
BaSO <sub>4</sub>	$2.3 \times 10^{-8}$
BaCrO <sub>4</sub>	$8.5 \times 10^{-11}$
BaF <sub>2</sub>	$2.4 \times 10^{-5}$
Ba(OH) <sub>2</sub> ·8H <sub>2</sub> O	$5.0 \times 10^{-3}$
Ba <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	$6 \times 10^{-39}$
Ba <sub>3</sub> (AsO <sub>4</sub> ) <sub>2</sub>	$1.1 \times 10^{-13}$
bismuth	
BiO(OH)	$4 \times 10^{-10}$
BiOCl	$1.8 \times 10^{-31}$
Bi <sub>2</sub> S <sub>3</sub>	$1 \times 10^{-97}$
cadmium	
Cd(OH) <sub>2</sub>	$5.9 \times 10^{-15}$
CdS	$1.0 \times 10^{-28}$
CdCO <sub>3</sub>	$5.2 \times 10^{-12}$

**TABLE J1**

Substance	$K_{sp}$ at 25 °C
calcium	
Ca(OH) <sub>2</sub>	$1.3 \times 10^{-6}$
CaCO <sub>3</sub>	$8.7 \times 10^{-9}$
CaSO <sub>4</sub> ·2H <sub>2</sub> O	$6.1 \times 10^{-5}$
CaC <sub>2</sub> O <sub>4</sub> ·H <sub>2</sub> O	$1.96 \times 10^{-8}$
Ca <sub>3</sub> (PO <sub>4</sub> ) <sub>2</sub>	$1.3 \times 10^{-32}$
CaHPO <sub>4</sub>	$7 \times 10^{-7}$
CaF <sub>2</sub>	$4.0 \times 10^{-11}$
chromium	
Cr(OH) <sub>3</sub>	$6.7 \times 10^{-31}$
cobalt	
Co(OH) <sub>2</sub>	$2.5 \times 10^{-16}$
CoS(α)	$5 \times 10^{-22}$
CoS(β)	$3 \times 10^{-26}$
CoCO <sub>3</sub>	$1.4 \times 10^{-13}$
Co(OH) <sub>3</sub>	$2.5 \times 10^{-43}$
copper	
CuCl	$1.2 \times 10^{-6}$
CuBr	$6.27 \times 10^{-9}$
CuI	$1.27 \times 10^{-12}$
CuSCN	$1.6 \times 10^{-11}$
Cu <sub>2</sub> S	$2.5 \times 10^{-48}$
Cu(OH) <sub>2</sub>	$2.2 \times 10^{-20}$
CuS	$8.5 \times 10^{-45}$

TABLE J1

Substance	$K_{sp}$ at 25 °C
$\text{CuCO}_3$	$2.5 \times 10^{-10}$
iron	
$\text{Fe(OH)}_2$	$1.8 \times 10^{-15}$
$\text{FeCO}_3$	$2.1 \times 10^{-11}$
$\text{FeS}$	$3.7 \times 10^{-19}$
$\text{Fe(OH)}_3$	$4 \times 10^{-38}$
lead	
$\text{Pb(OH)}_2$	$1.2 \times 10^{-15}$
$\text{PbF}_2$	$4 \times 10^{-8}$
$\text{PbCl}_2$	$1.6 \times 10^{-5}$
$\text{PbBr}_2$	$4.6 \times 10^{-6}$
$\text{PbI}_2$	$1.4 \times 10^{-8}$
$\text{PbCO}_3$	$1.5 \times 10^{-15}$
$\text{PbS}$	$7 \times 10^{-29}$
$\text{PbCrO}_4$	$2 \times 10^{-16}$
$\text{PbSO}_4$	$1.3 \times 10^{-8}$
$\text{Pb}_3(\text{PO}_4)_2$	$1 \times 10^{-54}$
magnesium	
$\text{Mg(OH)}_2$	$8.9 \times 10^{-12}$
$\text{MgCO}_3 \cdot 3\text{H}_2\text{O}$	$ca 1 \times 10^{-5}$
$\text{MgNH}_4\text{PO}_4$	$3 \times 10^{-13}$
$\text{MgF}_2$	$6.4 \times 10^{-9}$
$\text{MgC}_2\text{O}_4$	$7 \times 10^{-7}$
manganese	

TABLE J1

Substance	$K_{sp}$ at 25 °C
$\text{Mn(OH)}_2$	$2 \times 10^{-13}$
$\text{MnCO}_3$	$8.8 \times 10^{-11}$
$\text{MnS}$	$2.3 \times 10^{-13}$
mercury	
$\text{Hg}_2\text{O} \cdot \text{H}_2\text{O}$	$3.6 \times 10^{-26}$
$\text{Hg}_2\text{Cl}_2$	$1.1 \times 10^{-18}$
$\text{Hg}_2\text{Br}_2$	$1.3 \times 10^{-22}$
$\text{Hg}_2\text{I}_2$	$4.5 \times 10^{-29}$
$\text{Hg}_2\text{CO}_3$	$9 \times 10^{-15}$
$\text{Hg}_2\text{SO}_4$	$7.4 \times 10^{-7}$
$\text{Hg}_2\text{S}$	$1.0 \times 10^{-47}$
$\text{Hg}_2\text{CrO}_4$	$2 \times 10^{-9}$
$\text{HgS}$	$1.6 \times 10^{-54}$
nickel	
$\text{Ni(OH)}_2$	$1.6 \times 10^{-16}$
$\text{NiCO}_3$	$1.4 \times 10^{-7}$
$\text{NiS}(\alpha)$	$4 \times 10^{-20}$
$\text{NiS}(\beta)$	$1.3 \times 10^{-25}$
potassium	
$\text{KClO}_4$	$1.05 \times 10^{-2}$
$\text{K}_2\text{PtCl}_6$	$7.48 \times 10^{-6}$
$\text{KHC}_4\text{H}_4\text{O}_6$	$3 \times 10^{-4}$
silver	
$\frac{1}{2}\text{Ag}_2\text{O}(\text{Ag}^+ + \text{OH}^-)$	$2 \times 10^{-8}$

TABLE J1

Substance	$K_{sp}$ at 25 °C
AgCl	$1.6 \times 10^{-10}$
AgBr	$5.0 \times 10^{-13}$
AgI	$1.5 \times 10^{-16}$
AgCN	$1.2 \times 10^{-16}$
AgSCN	$1.0 \times 10^{-12}$
Ag <sub>2</sub> S	$1.6 \times 10^{-49}$
Ag <sub>2</sub> CO <sub>3</sub>	$8.1 \times 10^{-12}$
Ag <sub>2</sub> CrO <sub>4</sub>	$9.0 \times 10^{-12}$
Ag <sub>4</sub> Fe(CN) <sub>6</sub>	$1.55 \times 10^{-41}$
Ag <sub>2</sub> SO <sub>4</sub>	$1.2 \times 10^{-5}$
Ag <sub>3</sub> PO <sub>4</sub>	$1.8 \times 10^{-18}$
strontium	
Sr(OH) <sub>2</sub> ·8H <sub>2</sub> O	$3.2 \times 10^{-4}$
SrCO <sub>3</sub>	$7 \times 10^{-10}$
SrCrO <sub>4</sub>	$3.6 \times 10^{-5}$
SrSO <sub>4</sub>	$3.2 \times 10^{-7}$
SrC <sub>2</sub> O <sub>4</sub> ·H <sub>2</sub> O	$4 \times 10^{-7}$
thallium	
TlCl	$1.7 \times 10^{-4}$
TlSCN	$1.6 \times 10^{-4}$
Tl <sub>2</sub> S	$6 \times 10^{-22}$
Tl(OH) <sub>3</sub>	$6.3 \times 10^{-46}$
tin	
Sn(OH) <sub>2</sub>	$3 \times 10^{-27}$

TABLE J1

Substance	$K_{sp}$ at 25 °C
SnS	$1 \times 10^{-26}$
Sn(OH) <sub>4</sub>	$1.0 \times 10^{-57}$
zinc	
ZnCO <sub>3</sub>	$2 \times 10^{-10}$

**TABLE J1**